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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,600	02/18/2004	Chahee Peter Cho	76897-053US	1019

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PROSKAUER ROSE LLP
1001 PENNSYLVANIA AVE, N.W.,
SUITE 400 SOUTH
WASHINGTON, DC 20004

EXAMINER

CUEVAS, PEDRO J

ART UNIT	PAPER NUMBER
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2834

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/779,600

Applicant(s)

CHO ET AL.

Examiner

Pedro J. Cuevas

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see pages 5-6, filed on July 20, 2006, with respect to the rejection(s) of claim(s) 1-16 under 35 USC § 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of U.S. Patent No. 6,424,891 B1 to Sargent et al. and U.S. Patent No. 6,278,915 B1 to Deguchi et al.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 11-12 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,424,891 B1 to Sargent et al.

Sargent et al. clearly teaches the construction of an aircraft ground power unit comprising:

an internal combustion engine (110);

a dynamoelectric machine (160) mechanically coupled to the internal combustion engine by a shaft and electrically coupled to a direct current source (battery - not disclosed but inherently necessary to start the operation of the Gas Turbine Engine), wherein said dynamoelectric machine is sufficiently sized so that it can drive the shaft to start the internal combustion;

an autonomous range extender controller (200) having at least one user input (210); and

a portable enclosure (80) in which the internal combustion engine, dynamoelectric machine and controller are housed;

wherein in response to a user input to the controller, a sequence of range extender operations is initiated including (as stated in the Abstract):

- a first phase in which electrical energization is applied from the direct current source to the dynamoelectric machine for operation thereof as a motor to drive the shaft to start the engine in rotation;
- a second phase in which the engine is activated for operation as a prime mover; and
- a third phase in which the dynamoelectric machine is activated in generator operation for providing electrical current to the vehicle.

4. With regards to claim 12, Sargent et al. discloses the internal combustion engine comprises an ignition circuit and a fuel supply circuit (starter and fuel lines - not disclosed but inherently necessary to start the operation of the Gas Turbine Engine), each of these circuits coupled to a respective output of the controller.

5. With regards to claim 15, Sargent et al. discloses wherein the controller is responsive to a user termination input to apply an output signal to the fuel supply circuit to shut off the supply of fuel to the engine and, after a preset time delay, to output a signal to the ignition circuit to terminate engine ignition, thereby to avoid engine backfire.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-10, 13-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,424,891 B1 to Sargent et al. in view of U.S. Patent No. 6,278,915 B1 to Deguchi et al.

Sargent et al. disclose the construction of an aircraft ground power unit as disclosed above.

However, it fails to disclose a speed sensor indicative of shaft speed and an engine temperature sensor, each of these sensors coupled in a respective speed input and temperature input of the controller.

Deguchi et al. teach the construction of a driving force control system comprising: a speed sensor (25 or 26) indicative of shaft speed and an engine temperature sensor (column 8, lines 7-8), each of these sensors coupled to a respective speed input and temperature input of a controller (ECU 16), for the purpose of calculating a target engine speed needed to realize the vehicle speed, the target driving torque and the target generated electric energy at the lowest fuel consumption.

It would have been obvious to one skilled in the art at the time the invention was made to use the speed and engine temperature sensors and ECU disclosed by Deguchi et al. on the aircraft ground power unit disclosed by Sargent et al. for the purpose of calculating a target

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engine speed needed to realize the vehicle speed, the target driving torque and the target generated electric energy at the lowest fuel consumption.

8. With regards to claim 14, Deguchi et al. discloses the controller being configured to output signals to the ignition circuit and fuel supply circuit for prime mover activation in response to signals at the speed and temperature inputs attaining respective threshold values (Figures 4, 6, 7, 8 and 9).

9. With regards to claim 16, Deguchi et al. discloses an inverter/converter circuit (11, 12 and 13) connected to electrical terminals of a dynamoelectric machine (4) and to the controller, wherein the inverter/converter circuit is responsive to the controller to convert the direct current energization applied in the first phase to the dynamoelectric machine to alternating current for motoring operation, and to invert alternating current output of the dynamoelectric machine in the third phase for generator operation.

10. With regards to claims 1 and 7, Sargent et al. (column 6, line 36 to column 7, line 14) in view of Deguchi et al. (Figures 4 and 11) disclose a method for controlling driving force control system and aircraft ground power unit comprising the steps of:

applying electrical energization from a power source to the dynamoelectric machine for operation thereof as a motor to drive the shaft to start the engine in rotation in response to an initiation input;

sensing the rotational speed of the shaft;

sensing the temperature of the engine;

in response to a sensed rotational speed that meets a first predetermined speed threshold and a sensed engine temperature that meets a predetermined temperature

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threshold, supplying fuel to the engine and activating ignition of the engine for operation thereof as a prime mover for a predetermined time interval;

after a period of engine prime mover operation, activating the dynamoelectric machine for operation thereof as a generator when the sensed shaft rotational speed meets a second predetermined speed threshold higher than the first predetermined threshold to provide an electrical current output.

11. With regards to claim 2, Deguchi et al. (Figure 6) discloses a direct current source and the step of applying electrical energization to the dynamoelectric machine comprises inverting an output voltage of the direct current source to alternating current.

12. With regards to claims 3 and 5, both Sargent et al. (column 6, line 36 to column 7, line 14) and Deguchi et al. (Figure 10) disclose the direct current source being a battery for operation of a vehicle as a traction motor and applying the direct current output to drive the traction motor.

13. With regards to claims 4 and 8-9, Sargent et al. (column 6, line 36 to column 7, line 14) disclose the steps of:

producing an alternating current output of the dynamoelectric machine and converting the alternating current output to a direct current output;

applying the direct current output to charge a battery;

terminating the supply of fuel to the engine when the engine is to be stopped;

maintaining ignition activation of the engine after the fuel supply has been terminated;

deactivating engine ignition when fuel has been eliminated from the engine, thereby to avoid engine backfire; and

delaying the engine ignition deactivation for a preset time period.

14. With regards to claim 10, Sargent et al. (column 6, line 36 to column 7, line 14) discloses the range extender being self contained within an enclosure that is independent of a vehicle and the steps of applying electrical energization to the dynamoelectric machine, supplying fuel to the engine, activating ignition of the engine, activating the dynamoelectric machine, terminating the supply of fuel and deactivating engine ignition are controlled by a controller contained within the enclosure.

Conclusion

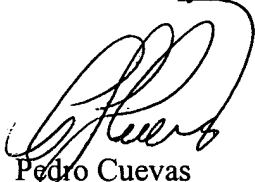
15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pedro J. Cuevas whose telephone number is (571) 272-2021. The examiner can normally be reached on M-F from 8:30 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on (571) 272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Pedro Cuevas
March 5, 2007

